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COMPUTERWORLD

intranets

THE MANAGER'S GUIDE TO WHAT'S REALLY IMPORTANT

INTEGRATING
LEGACY
DATABASES

# Old iron, new links

ILLUSTRATION BY RANDALL ENOS

WHAT'S ONLINE
*Page 3*

EXPLAINER
*Page 4*

PROJECT
*Page 6*

## Blending intranets with cranky, quirky legacy systems is a dirty but necessary business

BY KIM S. NASH

As glamorous and New Age as they appear, intranet applications are not a case of out with the old, in with the new.

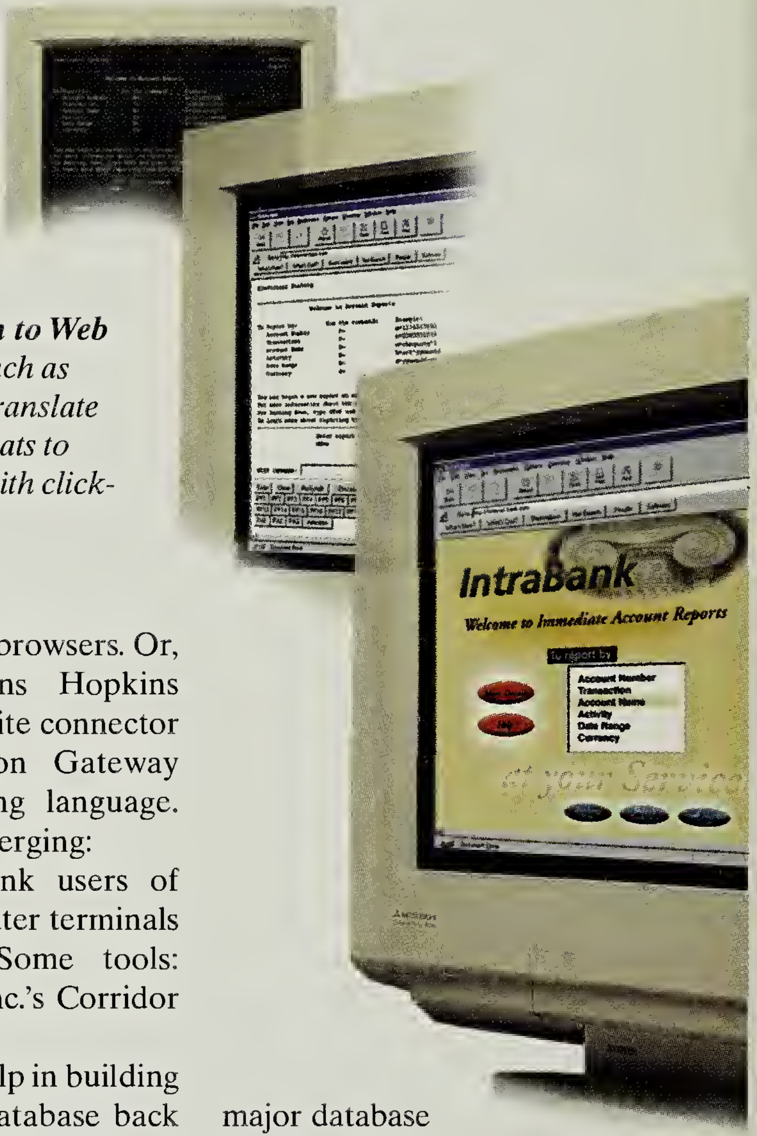
To create meaty applications, users must link intranets — internal systems built on public Internet standards — with legacy databases. Doing so lets companies move beyond static document publishing.

A sales-inventory application, for example, might accept an order at the company's World Wide Web site and trigger a database search to see if the item

Continues on *page 2*

ANALYSIS

# Old iron, new links



***From green screen to Web scene:*** *Products such as Simware's Salvo translate old database formats to Web-style pages with clickable links*

*Continued from page 1*

is in stock. This, in turn, would generate a warehouse manifest for packers on the back end and an electronic-mail message to the customer about order status.

"Intranet is not just about HTML," says an IS pro at a retailer who asked not to be named. "It's about capturing whole other technologies within it."

Yet getting database data out and Web data in (and vice versa) quickly and smoothly can be a big chore. If you're just starting, take some lessons from colleagues who have been there.

## Plan right

The latest intranet project plan at Access Health, Inc. in Rancho Cordova, Calif., includes a full-time programmer dedicated to scripting and database connectivity.

That's because the medical information company will need numerous applications written in the project's first year, explains technical support analyst John Determan. "We want to make sure we're not caught with this database aspect," he says.

Afterward, he expects several webmasters will be able to split the coding.

## Read the fine print

Six months ago, few choices were available for linking World Wide Web applications to databases. Users could buy or download free translators such as GSQL, a gateway from the University of Illinois that transforms SQL into a format readable by Web browsers. Or, like a group at Johns Hopkins University, they could write connector code with the Common Gateway Interface (CGI) scripting language. More choices are now emerging:

- Third-party utilities link users of mainframe or minicomputer terminals to Web applications. Some tools: Teubner & Associates, Inc.'s Corridor and Simware, Inc.'s Salvo.
- Point-and-click tools help in building Web applications with database back ends. In this niche: Spider from Spider Technologies, Inc. and FrontPage from Microsoft Corp.
- Middleware lets users translate database blueprints, such as SQL, to Web-readable formats. A player here: Applied Information Technologies, Inc.'s SQLWeb.
- Translators are now available from major database companies. Look to Sybase, Inc., Oracle Corp. and IBM.

The catch: Many of the products vendors talk about are still just promises, still in beta testing. Shipping products, having hit the market only during the past several months, are largely unproven.

That's frustrating, says Rob Bilson, a

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webmaster at Amkor Electronics, Inc. in West Chester, Pa. Amkor is building an inventory intranet that will link internal Web users with an IBM AS/400 minicomputer. The company has had to stop and evaluate at least three database connectors in the past few months.

"A lot of new, great products out there look as though they will meet our needs, but many are still early in their development," Bilson laments. He adds, "The biggest headache comes not from the conversion or interfacing, but from the cleaning up of the results."

Some utilities create a plain HTML-like page out of the data. Others can extract data from a database and rearrange it into a fully hyperlinked HTML form. Not every tool supports every database — or more than one.

## Go beyond gateways

Most serious database linkage isn't done with gateways such as GSQL. More users have opted for Web-specific development tools such as Allaire Corp.'s Cold Fusion or NetDynamics from Spider Technologies, Inc.

Cracker Barrel Old Country Store, Inc., for example, built intranet interfaces to a Microsoft SQL Server database with Cold Fusion. Bell Atlantic Corp. is building a database-anchored intranet with Jyacc Corp.'s Jam/Web tool kit, says Carole Franda, a webmaster at Bell Atlantic in Silver Spring, Md.

Franda's group oversees seven documentation projects, some of them run by PC users, others by Unix users. A Bell Atlantic developer is setting up a Sybase relational database with tables for each project. With Jam/Web, he is building an application to let users query the database via Web browsers.

Users can find out, for example, which parts of Project A depend on which parts of Project B. Hyperlinks in the forms produced by those queries will shoot users to more details, such as timetables and the names and E-mail addresses of team members responsible for specific tasks.

## Roll your own

Johns Hopkins University's Applied Physics Laboratory in Laurel, Md., started an intranet in 1995, when hardly any commercial Web-database utilities existed.

Database programming is daunting enough without newfangled Web ideas in the mix. The lab initially wrote CGI scripts to get its internal Web application to talk to an Oracle Corp. database. But CGI, which added many layers of code to the process, was too slow. It sometimes kept scientists waiting for minutes for query results, says Bob Jernigan, a senior programmer at the lab.

Jernigan then bought development tools from Oracle to write an application to talk to the database directly. The Oracle tools proved easier to handle for

*Continued on page 4*

| | |
|---|---|
| **Florida Bureau of Archives and Records Mgmt.** | 199.44.58.12/sos/divisions/dlis/archives.html |
| **Johns Hopkins lab** | www.jhuapl.edu |
| **Jyacc** | webster.jyacc.com |
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| **Sybase** | www.sybase.com |
| **Teubner & Associates** | www.teubner.com |
| **University of Illinois (GSQL)** | www.ncsa.uiuc.edu/SDG/People/jason/pub/gsql/starthere.html |

**ONLINE**

- For resources on how to integrate your databases and your intranet, see our online site at http://www.computerworld.com/intranets.

Also online this month:

- Forum with consultant Richard Finkelstein, president of Performance Computing, Inc.
- QuickPoll: What's your take on linking databases and intranets?
- Expanded interview with the Texas comptroller's office
- Link into Texas' pilot project
- Shows and conferences
- Link to past issues
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*Continued from page 3*

staff already familiar with Oracle's database, he said.

## Expect heavy lifting

But even tools made for the job can't do it all. If you aren't writing a few lines of code to compensate for the quirks of your legacy databases, you're cleaning up data.

Database queries have to be formulated just so, to get accurate results. Just as in data warehousing, Web programmers who write automated queries for end users must know how the database is set up on the back end and what kind of intranet coding will yield the sought-after answers at the front end.

"I have had many occasions when I have created the basic interface in under 15 minutes," says Amkor's Bilson, "but have had to spend quite a few hours prettying up the results and customizing other output."

## Recycle administrators

A database professional is a natural for the legacy integration job, says Jerry Grochow, chief technology officer at American Management Systems, Inc. in Fairfax, Va. "They already worry about how content is structured and how to find it once it's in a database," he explains. "It's not a big leap to do those same tasks for Web applications."

Webmasters at Boeing Computer Services in Seattle, Hershey Foods Corp. in Hershey, Pa., and the Florida Bureau of Archives and Records Management, for example, lead double lives as database administrators.

***Nash is Computerworld's senior editor, intranets. She can be reached at kim_nash@cw.com.***

## EXPLAINER

**There's no single best way to make legacy databases available on your intranet. Many older systems aren't part of a TCP/IP network, so getting TCP/IP connectivity is the first step. Once you've done that, consider the following means of access:**

1 **Oracle Web Server or a similar product, installed on your intranet.** It will field requests for data from a browser and extract data from a standard Oracle Corp. database or Oracle Universal Server, the database engine that handles multiple data types. Data can be automatically formatted for HTML display on a Web server, or downloaded for use on the client. An early Java application such as WebCharts from InfoSpace, Inc. in San Mateo, Calif., can also sit on a Web server, extract the data from an Oracle, Sybase, Inc. or Informix, Inc. database and download it to the client for three-dimensional display.

2 **New tools that link rapid development systems to legacy applications over intranets.** Applications built in Dynasty 3.0 from Dynasty Technologies, Inc. in Lisle, Ill., can make use of existing C++ libraries. You can give your Visual Basic and PowerBuilder applications a Dynasty Services Request Broker, which supplies TCP/IP support or the services of a transaction processing monitor, such as Tuxedo. Dynasty's Open-CGI (Common Gateway Interface) and Open-Java modules link Dynasty and legacy applications to Web servers.

3 **New Java applications.** These can access legacy databases via JavaSoft's JDBC (Java Database Connectivity) while operating across multiple computing platforms on your network. The JDBC set of application programming interfaces is based on the same X/Open SQL Call-Level Interface as Open Database Connectivity (ODBC), the earlier API set for common database access.

*— Charles Babcock,* Computerworld*'s technology editor*

## Resources Resources Resources Resources Resources Resources Resources Resources Resources

**MAGAZINES**

The September issue of WebTechniques magazine focuses on various aspects of developing Web databases. The articles offer a good look at the technical pros and cons of Web database development and the breadth of options that exist. See http://www.WebTechniques.com.

**REPORTS**

David Strom, a consultant in Port Washington, N.Y., takes it up a level in his white paper "Finding the Right Intranet Technologies to Buy." It includes a section on databases. See it (and a host of links to other intranet sites) at http://www.strom.com/pubwork/intranet.html.

Dynamic Information Systems' white paper extols the Web and its usefulness, but it also presents some database cons. Dynamic's site also contains links to live, working examples of projects that involve intranet and database integration. Dynamic is at http://www.dynamic-info.com/white_papers/infoarchover.html.

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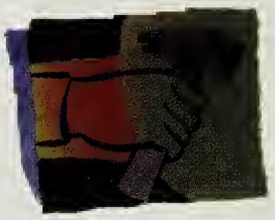
## PROJECT



# Office of the Comptroller of Public Accounts

### State of Texas

*Austin, Texas*

**Ralph Hutchins, systems analyst**
**Stuart Greenfield, systems analyst**

The Office of the Comptroller of Public Accounts for the state of Texas has a big job in a big state: It collects taxes, pays the state's bills and certifies to the legislature that revenue is available for spending.

The Austin-based department also keeps financial records for some 250 state agencies and universities. Beyond its government constituencies, the department also has a great deal of information that might be of value to John Q. Public. John Sharp, the comptroller, wants to make that information easily accessible to taxpayers wherever possible.

The push to broaden accessibility sounded like a job for distributed computing. But the department's expertise is mainframe programming, not client/server. So rather than wrestle with a wrenching re-engineering project, the state is piloting a Web-oriented approach to database uses.

"This allows us to leverage our talent," Greenfield says. The department ranks with Fortune 500 companies in terms of its mainframe operations and thinks it may have found a way to open up its mainframes and still keep its programmers focused on what they do well.

The trick: A system that uses browsers as the interface to the entire state database.

### What they're doing

Piloting a project to connect 250 state agencies and departments directly to their CICS and DB2 databases. Intercepting 3270 screens and using Rexx or Perl programming to aggregate transaction codes before representing them back to users as an HTML document. Providing help function via Lotus Notes.

### Replaces

Process that requires user to call a systems analyst and request a specific batch report, which is printed and mailed.

### Benefits

Gives customers direct access to the data they need. Frees IS staff from mundane report-generating. Improves service to other agencies. "Our cycle time from request to delivery was a day, and now it's done almost instantaneously," Greenfield says.

Also, "it leverages our talent. We write good legacy systems. Our programmers are our most important resource."

### Cost/time

Prototype cost less than $50,000. "We started in March. It's now up and going," Hutchins says. The DB2 component took only a month; CICS is still in beta testing.

### Staffing

Six people: four staff people and two IBM consultants. The staffers initially worked on the project part time.

### Tools

Netscape 2.0; an RS/6000; a suite of IBM software: Internet Connect Server, CICS WWW gateway, DB2 WWW gateway, DB2 6000, CICS/6000. Straight HTML, Lotus Notes.

### Biggest technical challenge

Learning AIX. "I was a mainframe person," says Hutchins. Also, the lack of development tools such as those available for client/server — Delphi and PowerBuilder, for instance.

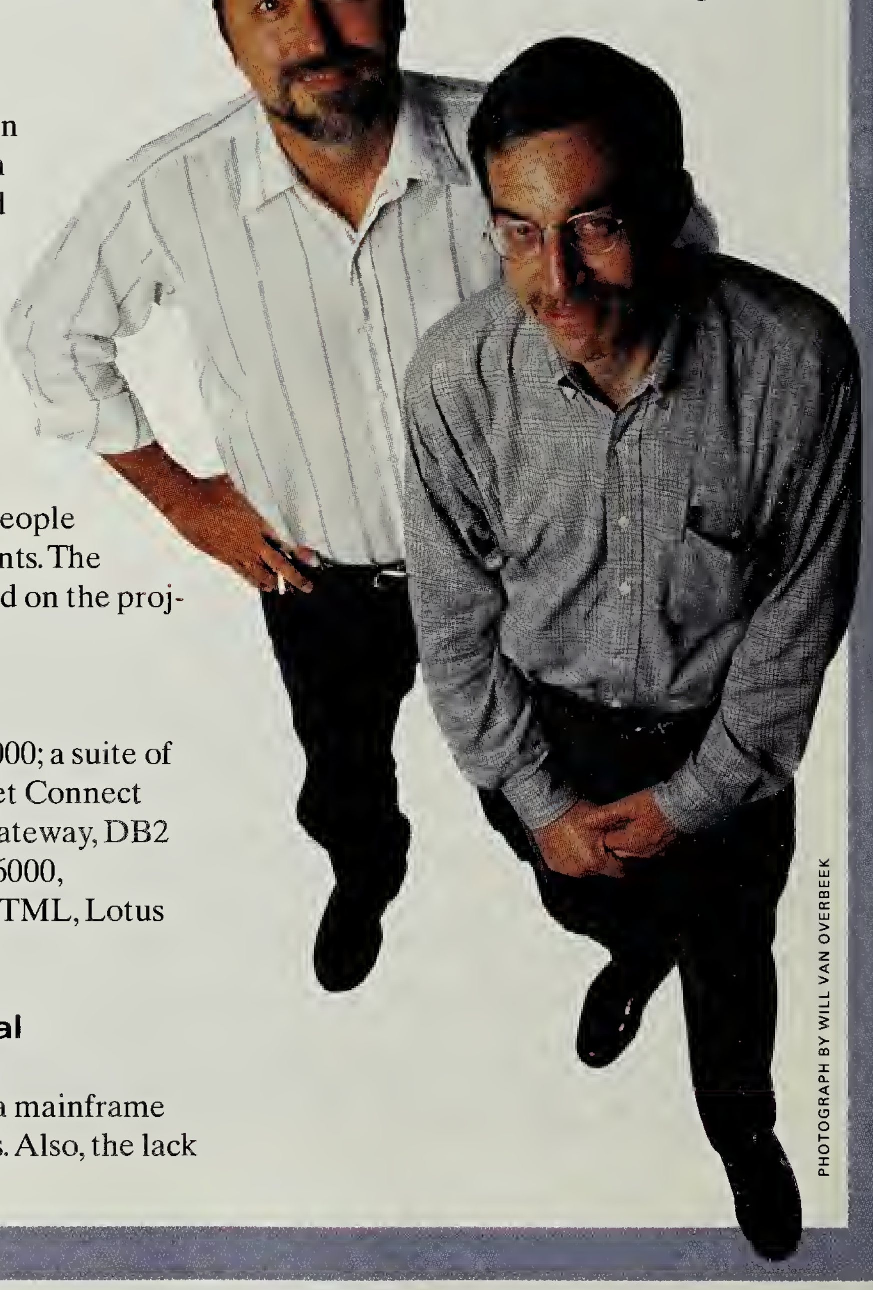
### Advice for IS

"This is the way to go. It offers tremendous flexibility, it's a lot lower-cost than alternatives, and it provides people in your organization an opportunity to learn and grow," Greenfield says. Adds Hutchins: "Go Web, young man."

### Next steps

Finish prototypes and work on rolling system out. Make public information available on the Web, so anyone, including large customers such as Dun & Bradstreet Corp., can do queries.

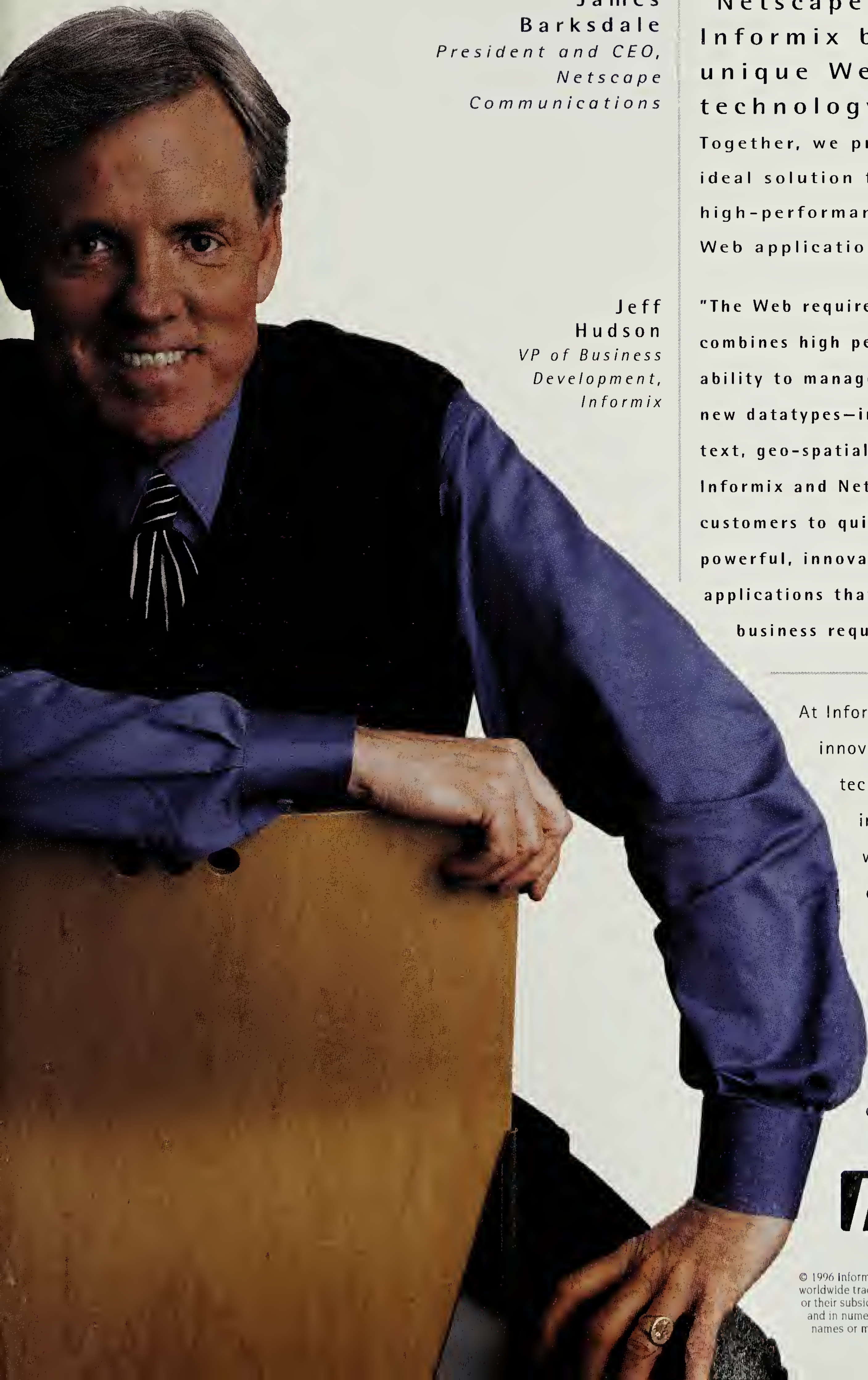
**— Michael Fitzgerald, *Computerworld*'s online editor**



**SYSTEMS ANALYST STUART GREENFIELD (right):** *An intranet "provides people in your organization an opportunity to learn and grow"*

PHOTOGRAPH BY WILL VAN OVERBEEK

# Netscape's James Barksdale on Informix.



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*President and CEO,*
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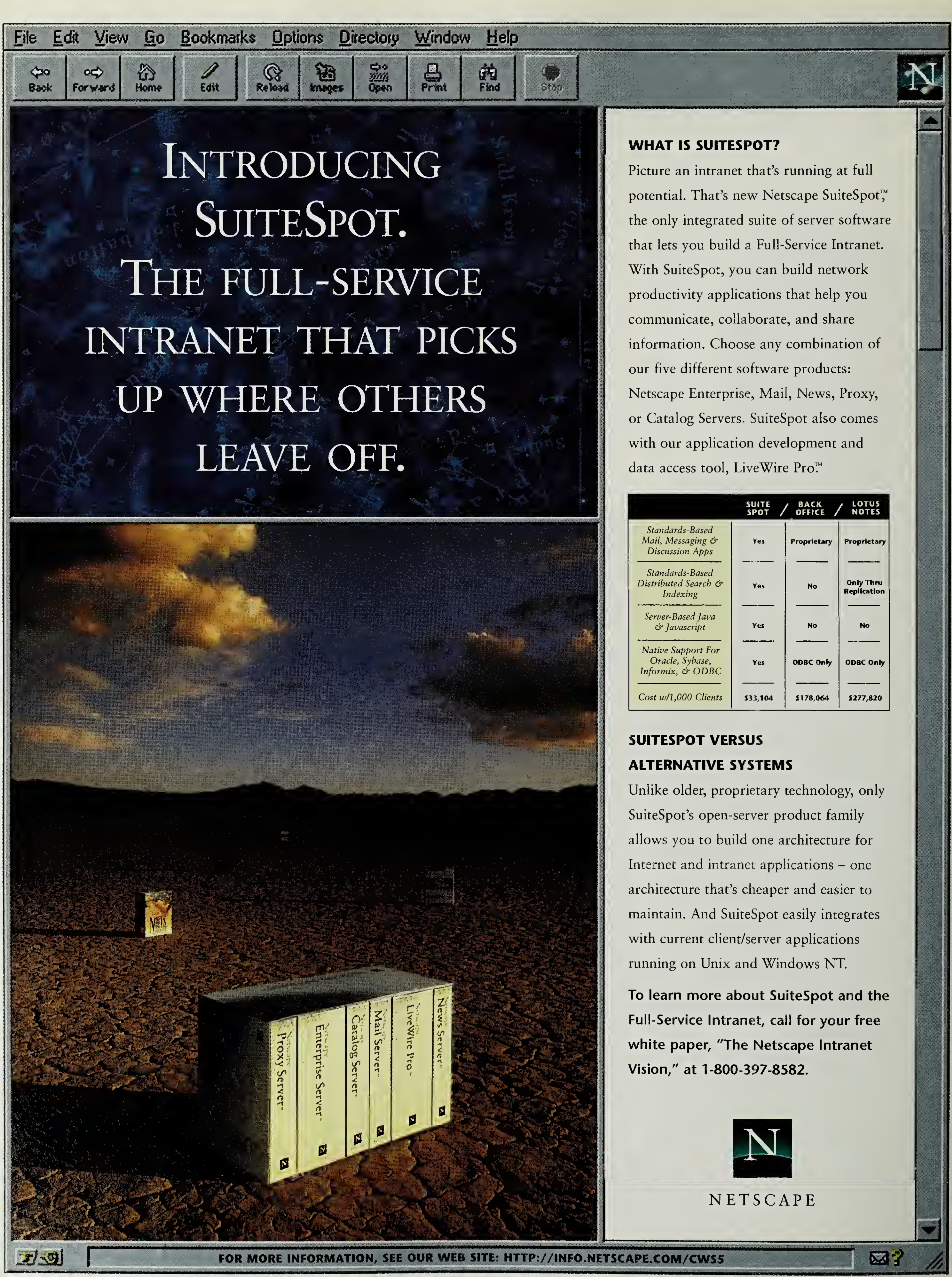

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